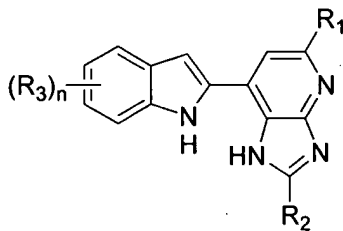


CLAIMS

What is claimed is:

1. A method for treating or lessening the severity of reperfusion injuries, osteoporosis and/or bone metastasis comprising:

administering to a subject in need thereof a therapeutically effective amount of a compound having the structure (I):



(I)

or pharmaceutically acceptable derivative thereof;

wherein n is an integer from 0-4;

R₁ is hydrogen, -NH₂, -NHMe, -NHAc, -OH, F, -OMe, -CN, or -NH(C=O)OEt;

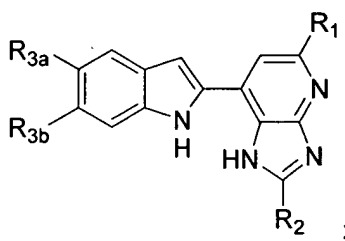
R₂ is hydrogen, -NR_AR_B, -OR_A, an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein R_A and R_B are each independently hydrogen or an aliphatic, heteroaliphatic, aryl or heteroaryl moiety;

each occurrence of R₃ is independently hydrogen, halogen, cyano, or an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, or a group -G-R_C, wherein G is absent or is -CH₂-, -NR_D-, -O-, or (C=O), and wherein R_C is hydrogen, -NR_FR_G, -OR_F, -SR_F, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein R_D, R_F and R_G are each independently hydrogen, -NR_xR_y, an aliphatic, cycloaliphatic, heteroaliphatic, cycloheteroaliphatic, aryl, or heteroaryl moiety, an acyl moiety substituted with an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, or wherein R_D and R_C or R_F and R_G taken together are a 3-, 4-, 5-, 6-, 7- or 8-membered substituted or unsubstituted cycloaliphatic or cycloheteroaliphatic moiety; wherein each occurrence of R_x and R_y is independently hydrogen, an aliphatic, cycloaliphatic, heteroaliphatic, cycloheteroaliphatic, aryl, or heteroaryl moiety, an acyl moiety substituted with an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, or wherein R_x and R_y taken together are a 4-, 5- or 6-

membered substituted or unsubstituted, saturated or unsaturated cycloaliphatic or cycloheteroaliphatic moiety; and

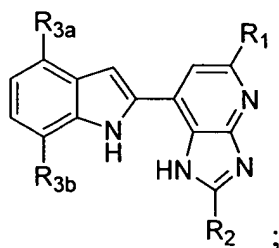
a pharmaceutically acceptable carrier or diluent; and optionally further comprising administering an additional therapeutic agent.

2. The method of claim 1, wherein the compound has the structure:



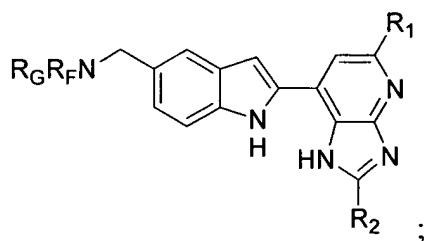
wherein R_{3a} and R_{3b} are each independently hydrogen, halogen, cyano, or an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, or a group -G-R_C, wherein G is absent, -CH₂-, -NR_D-, -O-, or (C=O), and wherein R_C is hydrogen, -NR_FR_G, -OR_F, -SR_F, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein R_D, R_F and R_G are each independently hydrogen, -NR_xR_y, an aliphatic, cycloaliphatic, heteroaliphatic, cycloheteroaliphatic, aryl, or heteroaryl moiety, an acyl moiety substituted with an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, or wherein R_D and R_C or R_F and R_G taken together are a 3-, 4-, 5-, 6-, 7- or 8-membered substituted or unsubstituted cycloaliphatic or cycloheteroaliphatic moiety; wherein each occurrence of R_x and R_y is independently hydrogen, an aliphatic, cycloaliphatic, heteroaliphatic, cycloheteroaliphatic, aryl, or heteroaryl moiety, an acyl moiety substituted with an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, or wherein R_x and R_y taken together are a 4-, 5- or 6-membered substituted or unsubstituted, saturated or unsaturated cycloaliphatic or cycloheteroaliphatic moiety.

3. The method of claim 1, wherein the compound has the structure:



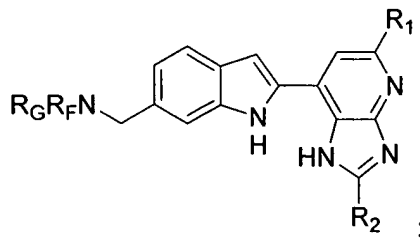
wherein R_{3a} and R_{3b} are each independently hydrogen, halogen, cyano, or an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, or a group $-G-R_C$, wherein G is absent, $-\text{CH}_2-$, $-\text{NR}_D-$, $-\text{O}-$, or $(\text{C}=\text{O})$, and wherein R_C is hydrogen, $-\text{NR}_F R_G$, $-\text{OR}_F$, $-\text{SR}_F$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein R_D , R_F and R_G are each independently hydrogen, $-\text{NR}_x R_y$, an aliphatic, cycloaliphatic, heteroaliphatic, cycloheteroaliphatic, aryl, or heteroaryl moiety, an acyl moiety substituted with an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, or wherein R_D and R_C or R_F and R_G taken together are a 3-, 4-, 5-, 6-, 7- or 8-membered substituted or unsubstituted cycloaliphatic or cycloheteroaliphatic moiety; wherein each occurrence of R_x and R_y is independently hydrogen, an aliphatic, cycloaliphatic, heteroaliphatic, cycloheteroaliphatic, aryl, or heteroaryl moiety, an acyl moiety substituted with an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, or wherein R_x and R_y taken together are a 4-, 5- or 6-membered substituted or unsubstituted, saturated or unsaturated cycloaliphatic or cycloheteroaliphatic moiety.

4. The method of claim 1, wherein the compound has the structure:



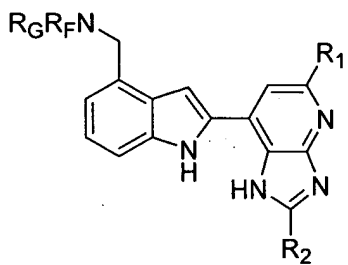
wherein R_1 , R_2 , R_F and R_G are as defined in claim 1.

5. The method of claim 1, wherein the compound has the structure:



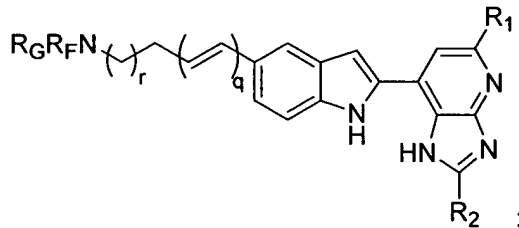
wherein R_1 , R_2 , R_F and R_G are as defined in claim 1.

6. The method of claim 1, wherein the compound has the structure:



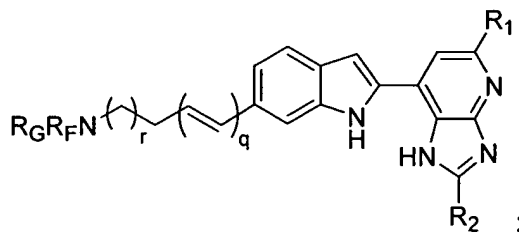
wherein R_1 , R_2 , R_F and R_G are as defined in claim 1.

7. The method of claim 1, wherein the compound has the structure:



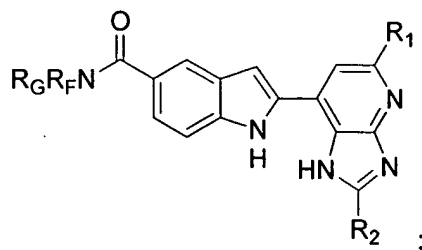
wherein q and r are each independently 0 or 1; and R_1 , R_2 , R_F and R_G are as defined in claim 1.

8. The method of claim 1, wherein the compound has the structure:



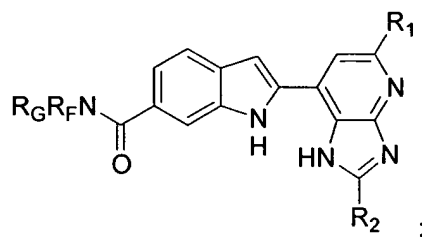
wherein q and r are each independently 0 or 1; and R_1 , R_2 , R_F and R_G are as defined in claim 1.

9. The method of claim 1, wherein the compound has the structure:



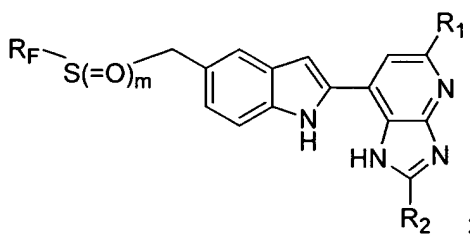
wherein R_1 , R_2 , R_F and R_G are as defined in claim 1.

10. The method of claim 1, wherein the compound has the structure:



wherein R_1 , R_2 , R_F and R_G are as defined in claim 1.

11. The method of claim 1, wherein the compound has the structure:

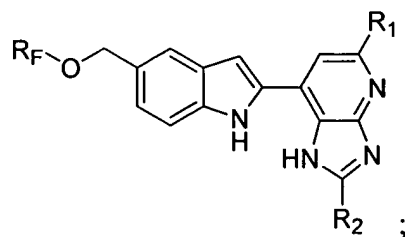


wherein R_1 and R_2 are as defined in claim 1;

m is 0, 1 or 2; and

R_F is an aliphatic, cycloaliphatic, heteroaliphatic, cycloheteroaliphatic, aryl, or heteroaryl moiety.

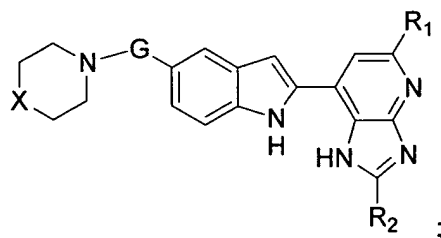
12. The method of claim 1, wherein the compound has the structure:



wherein R_1 and R_2 are as defined in claim 1; and

R_F is hydrogen, a protective group or an aliphatic, cycloaliphatic, heteroaliphatic, cycloheteroaliphatic, aryl, or heteroaryl moiety.

13. The method of claim 1, wherein the compound has the structure:

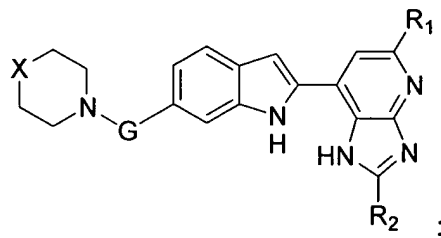


wherein R_1 and R_2 are as defined in claim 1;

G is CH_2 or $-(\text{C}=\text{O})$; and

X is O, S, C=O, S=O, $\text{C}=\text{CR}_4\text{R}_5$, NR_4 , or CR_4R_5 ; wherein each occurrence of R_4 and R_5 is independently hydrogen, hydroxyl, halogen, cyano an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, or is an acyl moiety substituted with an aliphatic, heteroaliphatic, aryl or heteroaryl moiety.

14. The method of claim 1, wherein the compound has the structure:



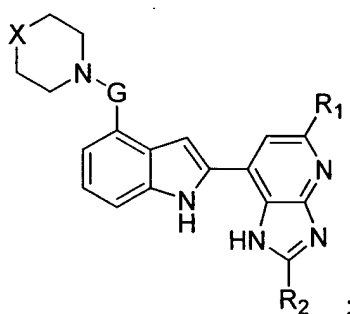
wherein R_1 and R_2 are as defined in claim 1;

G is CH_2 or $-(\text{C}=\text{O})$; and

X is O, S, C=O, S=O, $\text{C}=\text{CR}_4\text{R}_5$, NR_4 , or CR_4R_5 ; wherein each occurrence of R_4 and R_5 is independently hydrogen, hydroxyl, halogen, cyano an aliphatic, heteroaliphatic, aryl, or

heteroaryl moiety, or is an acyl moiety substituted with an aliphatic, heteroaliphatic, aryl or heteroaryl moiety.

15. The method of claim 1, wherein the compound has the structure:

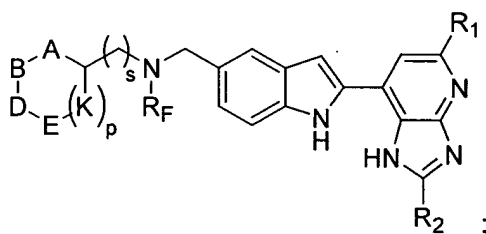


wherein R_1 and R_2 are as defined in claim 1;

G is CH_2 or $-(\text{C}=\text{O})$; and

X is O, S, $\text{C}=\text{O}$, $\text{S}=\text{O}$, $\text{C}=\text{CR}_4\text{R}_5$, NR_4 , or CR_4R_5 ; wherein each occurrence of R_4 and R_5 is independently hydrogen, hydroxyl, halogen, cyano an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, or is an acyl moiety substituted with an aliphatic, heteroaliphatic, aryl or heteroaryl moiety.

16. The method of claim 1, wherein the compound has the structure:



wherein R_1 and R_2 are as defined in claim 1;

p is an integer from 0-3;

s is an integer from 0-4;

A, B, D, E and each occurrence of K are independently absent, O, S, $-\text{C}=\text{O}$, $-\text{S}=\text{O}$, $-\text{C}=\text{CR}_4\text{R}_5$, $-\text{NR}_4$, or $-\text{CR}_4\text{R}_5$, wherein each occurrence of R_4 and R_5 is independently hydrogen, hydroxyl, halogen, cyano, $-\text{OR}_x$, $-\text{SR}_x$, $-\text{NR}_x\text{R}_y$, an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, or is an acyl moiety substituted with an aliphatic, heteroaliphatic, aryl or heteroaryl

moiety; and wherein A and B, B and D, D and E, E and K and any two adjacent K groups may be linked by a single or double bond as valency permits; wherein each occurrence of R_x and R_y is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, aliphaticaryl, heteroaliphatic aryl, aliphaticheteroaryl or heteroaliphaticheteroaryl moiety.

17. The method of any one of claims 1-16, wherein in the compound R_1 is NH_2 .
18. The method of any one of claims 1-16, wherein in the compound R_1 is hydrogen.
19. The method of any one of claims 1-16, wherein in the compound R_2 is NH_2 , OH, C_1-C_6 alkyl or C_1-C_6 alkenyl, said alkyl and alkenyl groups optionally substituted with halogen or hydroxyl.
20. The method of any one of claims 1-16, wherein in the compound R_2 is C_1-C_2 alkyl.
21. The method of any one of claims 1-16, wherein in the compound R_2 is methyl.
22. The method of any one of claims 1-16, wherein in the compound R_2 is hydrogen.
23. The method of any one of claims 4-10, wherein in the compound one of R_F or R_G is hydrogen or lower alkyl; and the other is an alkyl, heteroalkyl, aryl, heteroaryl, alkylaryl or alkylheteroaryl, optionally independently substituted for each occurrence with one or more of halogen, alkoxy, thioalkyl, or substituted or unsubstituted alkyl, heteroalkyl, aryl, or heteroaryl, or wherein R_F and R_G taken together are a 3-, 4-, 5-, 6-, 7- or 8-membered substituted or unsubstituted, saturated or unsaturated cyclic or heterocyclic moiety.
24. The method of any one of claims 4-10, wherein in the compound one of R_F or R_G is hydrogen or lower alkyl; and the other is an aryl, heteroaryl, alkylaryl or alkylheteroaryl moiety, optionally independently substituted for each occurrence with one or more of halogen, alkoxy, thioalkyl, or substituted or unsubstituted alkyl, heteroalkyl, aryl, or heteroaryl, or wherein R_F and

R_G taken together are a 3-, 4-, 5-, 6-, 7- or 8-membered substituted or unsubstituted, saturated or unsaturated cyclic or heterocyclic moiety.

25. The method of claim 24, wherein in the compound one of R_F or R_G is hydrogen or lower alkyl; and the other is phenyl, pyridyl, (alkyl)phenyl, or (alkyl)pyridyl, optionally substituted with one or more occurrences of halogen, trifluoromethoxy, methoxy, trifluoromethyl, methylthio, or substituted or unsubstituted lower alkyl, lower heteroalkyl, aryl or heteroaryl.

26. The method of any one of claims 4-10, wherein in the compound one of R_F or R_G is hydrogen or lower alkyl; and the other is a cyclic or acyclic, linear or branched, saturated or unsaturated aliphatic moiety optionally substituted with one or more of substituted or unsubstituted aryl, heteroaryl, amide, alkoxy, hydroxyl, thioalkyl, thiol, acyl or amino.

27. The method of claim 11, wherein in the compound R_F is an alkyl, cycloalkyl, heteroalkyl, cycloheteroalkyl, aryl, heteroaryl, alkylaryl or alkylheteroaryl, optionally independently substituted for each occurrence with one or more of halogen, alkoxy, thioalkyl, or substituted or unsubstituted alkyl, heteroalkyl, aryl, or heteroaryl.

28. The method of claim 12, wherein in the compound R_F is hydrogen, a protecting group, or an alkyl, cycloalkyl, heteroalkyl, cycloheteroalkyl, aryl, heteroaryl, alkylaryl or alkylheteroaryl, optionally independently substituted for each occurrence with one or more of halogen, alkoxy, thioalkyl, or substituted or unsubstituted alkyl, heteroalkyl, aryl, or heteroaryl.